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SUMMARY

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Food and Agriculture Organization

THE IMPACT OF ADVANCES IN STATISTICAL THEORY AND MODERN TECHNOLOGY ON AGRICULTURAL CENSUS METHODOLOGY

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THE IMPACT OF ADVANCES IN STATISTICAL THEORY AND MODERN TECHNOLOGY ON AGRICULTURAL CENSUS METHODOLOGY

by

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1. Basic features of modern needs for statistical data

Statistical data on agricultural structure are increasingly required in less developed as well as in advanced countries. Such information is collected in general by means of an agricultural census.

Because of lack of funds, trained personnel, and other resources developing countries would not be able to meet the increased needs if statistical theory had not shown the way to collect sufficiently reliable data by the application of sampling methods. In advanced countries, taking agricultural census by complete enumeration, the need for more data has been met by broadening the scope of the census through sampling.

The introduction of electronic computers has brought about substantial savings in processing time and costs while more complex statistics can be tabulated at the same time.

2. Needs of developing countries

Statistical requirements of economic development plans depend on the kind of planning used. At early and intermediate stages of economic growth where only national targets or targets for large areas are being established the data needed can be supplied by a sample census. Complete enumeration is only required at the most intensive stage of planning when targets are set for small units.

The application of sampling has made possible also the introduction of objective measurements and counts, which are indispensable when farmers are not able to supply the information needed by interviews.

3. Broadening the scope of the census

Requirements for more data could be met by the application of sampling methods. These methods are particularly useful for the collection of statistics which are too complex for complete enumeration. The problem of reconciliation of sample estimates and results of complete enumeration has not yet been fully solved.

4. Speed requirements and advance estimates

Policy decisions require up-to-date information which need can be satisfied in most cases by advance tabulation of samples.

Electronic computers are the most powerful tools among the mechanical means for speeding up the processing of censuses. They also make it possible to reduce manual checking and editing and to correct automatically minor errors.

The present status of technical development has not yet decreased the time needed for preparation of input data. Several types of machines are being developed for this purpose.

5. Broadening the tabulation program

Sample tabulations are not only used for supplying advance information but also for preparing additional tabulations, cross tabulations and tabulations in case of inadequate resources.

The use of electronic computers has opened further possibilities for broadening the tabulation program by preparing during the preparation of basic tables additional tables for sub-groups or territorial subunits. Derived figures can be calculated at the same time.

6. Improved accuracy

Modern sampling methods have contributed also to improving the accuracy of agricultural data. They have been applied for this purpose in pre-testing, and built-in and post-enumeration checks of the census. Savings on processing costs have been achieved by application of sampling to the control of the quality of processing.

7. Rationalisation

Pre-testing of census questionnaires and enumeration procedures has been conducive to a more rational census planning. The introduction of random sampling has provided census designers with the quantitative data required for this purpose.

The development of electronic computers is on the way to revolutionize the processing of census data. Computers perform quite different operations without manual interruption. The new storage techniques open complete new possibilities of studying interrelationships. Computers have introduced a complete new concept of census processing. Improvisation is not permitted in using these machines and thus tends to rationalize the whole process of census taking.

8. Logistic problems arising from technological development

Setting-up of computers for census processing needs careful preparation requiring several years and includes construction or reconstruction of a building, training of programmers and operators, reorganization of the work flow, preparation and checking of machine programs.

The problems of installing computers in statistical offices with no previous punch-card experience are unknown. There would be large scope for international assistance so as to bring the advantages of electronic processing of agricultural censuses to developing countries. A pilot project has been carried out of transferred data processing. The census questionnaires of Libya were processed on electronic computers in Germany. The project has given hope that the development in electronic computation might be used to a much greater advantage in ensuring speedy tabulation of the 1970 censuses of agriculture in less developed countries. International assistance might well take the form of organizing regional processing centres provided with electronic computers.

S 1008 E - Oct.1962 - 1,600